Amendments to the Specification:

Please replace paragraphs [0010] and [0011] as follows:

[0010] The invention is a microwave powered lamp. A microwave powered lamp in accordance with the invention includes a light reflective cavity; an electrodeless bulb contained in the light reflective cavity from which light is emitted when the electrodeless bulb is excited by microwaves; a magnetron for providing the microwaves for exciting the electrodeless bulb; a waveguide which couples the microwaves emitted by the magnetron to the light reflective cavity for exciting the electrodeless bulb; a housing which contains the ~~lamp~~ magnetron and the waveguide; a detector disposed within the housing or the waveguide, which detects the microwaves which are not coupled to the bulb during operation of the magnetron and outputs a signal indicative of a level of received microwaves; and a magnetron control, coupled to the detector, which causes the magnetron to be turned off when a level of the signal indicates the level of received microwaves exceeds a threshold indicative of the bulb not being ignited. The detector may comprise an electrical field probe disposed in the waveguide at a location which produces a response to microwaves not coupled to the bulb sufficient to detect when the bulb is not ignited during magnetron operation and the magnetron control may be a control circuit which produces a control signal for turning off the magnetron by removing electrical power from the magnetron when the threshold is exceeded. The electrical field probe may be located at an electrical field maximum in the waveguide. The detector may comprise an antenna located within the housing which receives spurious microwaves leaking from any of at least one of the magnetron, waveguide or light

reflective cavity which produces a response to the spurious microwaves sufficient to detect when the electrodeless bulb is not ignited during magnetron operation and the magnetron control may be a control circuit which produces a control signal for turning off the magnetron by removing electrical power from the magnetron when the threshold is exceeded. The magnetron control may comprise a power supply of the magnetron and the electrical power from the power supply to the magnetron may be reduced or turned off when the signal indicates the level of received microwaves exceeds the threshold for a set period of time.

[0011] The invention is also a method of control of a microwave powered lamp. A method of control of a microwave powered lamp includes a light reflective cavity, an electrodeless bulb contained in the light reflective cavity from which light is emitted when the electrodeless bulb is excited by microwaves, a magnetron for providing the microwaves for exciting the electrodeless bulb, a waveguide which couples microwaves emitted by the magnetron to the light reflective cavity for exciting the electrodeless bulb, a housing which contains the ~~lamp~~ magnetron and the waveguide, a detector disposed within the housing or the waveguide which detects microwaves which are not coupled to the bulb during operation of the magnetron and a magnetron control coupled to the detector for controlling activation of the magnetron comprises providing a signal from the detector indicative of a level of detected microwaves; and the magnetron control reduces power to the magnetron when a level of the signal indicates the level of the detected microwaves exceeds a threshold indicative of the bulb not being ignited. The detector may comprise an electrical field probe disposed in the waveguide at a location which produces a response to microwaves not coupled to the bulb sufficient

to detect when the bulb is not ignited during magnetron operation and the magnetron control may be a control circuit which produces a control signal for turning off the magnetron by removing electrical power from the magnetron when the threshold is exceeded. The electrical field probe may be located at an electrical field maximum in the waveguide. The detector may comprise an antenna located within the housing which receives spurious microwaves leaking from any of at least one of the magnetron, waveguide or light reflective cavity which produces a response to the spurious microwaves sufficient to detect when the electrodeless bulb is not ignited during magnetron operation and the magnetron control may be a control circuit which produces a control signal for turning off the magnetron by removing electrical power from the magnetron when the threshold is exceeded. The magnetron control may comprise a power supply of the magnetron and the electrical power from the power supply to the magnetron may be reduced or turned off when the signal indicates the level of received microwaves exceeds the threshold for a set period of time.

Please replace paragraphs [0020] and [0021] as follows:

[0020] The present invention may be practiced in numerous microwave powered lamp designs with one acceptable design being the prior art microwave powered lamp design illustrated in Figs. 1 and 2 as discussed in conjunction with first and second embodiments 100 and 200 respectively illustrated in Figs. 3 and 4 and 5 and 6. With the invention, the photocell 32 and control circuit 33 of the prior art ~~is~~ are replaced with a microwave detector which is located within the microwave cavity/waveguide 14 or within the housing 22 of a microwave powered lamp 100 or

200 as respectively illustrated in Figs. 3 and 4 and 5 and 6. The detector location in the housing may be with the detector extending into the microwave cavity/waveguide 14 where the VSWR is sensed, as illustrated in the embodiment 100 in Figs. 3 and 4, or external to the microwave cavity/waveguide 14 but within the housing 22, as illustrated in Figs. 5 and 6. In the first embodiment 100, as illustrated in Figs. 3 and 4, a microwave probe 102 extends into the microwave cavity/waveguide 14 and in the second embodiment, illustrated in Figs. 5 and 6, a loop antenna 202 receives spurious microwaves leaking from any of the at least one of the magnetron 12, microwave cavity/waveguide 14 or light ~~reflection~~ reflective cavity 204 of the second embodiment 200 of Figs. 5 and 6. As illustrated in Figs. 3 and 4, the light reflective cavity 28 is external to the housing 28 and, as illustrated in Figs. 5 and 6, the light reflective cavity 204 is external to the housing 22.

[0021] In each embodiment, the detected microwaves, whether detected from within the microwave cavity/waveguide 14 or within the housing 22, are processed by a VSWR detection circuit 300, which may be in accordance with the design of Fig. 7, that performs microwave detection and provides a variable current, such as, but not limited to between a 4 to 20 milliamps range which drives a threshold control circuit 302 to produce an INTERLOCK CONTROL SIGNAL 304 which is applied to the magnetron power supply 306. The INTERLOCK CONTROL SIGNAL turns off the magnetron 12 when the microwave signal detected by the microwave probe 102 or loop antenna 202 or other detector design rises above a threshold as described in detail below with respect to Fig. 8 for longer than a set time interval. The set interval

may be less than one second during which the effect of transient VSWR variation subsides to a condition reflecting normal ignition of the electrodeless bulb 16.

Please replace paragraphs [0023] and [0024] as follows:

[0023] The second embodiment 200 of the invention in Figs. 5 and 6 functions in the same manner as the first embodiment with the difference being that the VSWR detection circuit 300 is mounted on one of the internal sidewalls 206 of housing 22 at a location where sufficient spurious microwave energy, which leaks from the microwave cavity/waveguide 14, light reflective cavity 204 or magnetron 12, is detected if the bulb 16 is ignited. When proper bulb operation occurs, the loading of the output from the magnetron 12 keeps the signal level produced by the VSWR detection circuit 300 below a threshold as discussed below in conjunction with Fig. 8. The signal level produced by the VSWR detection circuit 300 below the threshold results in the INTERLOCK CONTROL SIGNAL 304 as illustrated in Fig. 8 being applied from the threshold control circuit 302 to the magnetron power supply 306 not turning off the magnetron power supply ~~304~~.

[0024] Fig. 7 illustrates an embodiment of a VSWR detection circuit 300 which may be used with the practice of the present invention. The E field probe 102 and loop antenna 202 are illustrated, but it should be understood that the present invention is not limited to any type of a microwave detector. The E field probe 102 or loop antenna 202 produces a very small voltage signal representative of the level of detected microwaves either within the microwave cavity/waveguide 14 or within the housing 22. The small voltage signal produced by the E field probe 102 or loop antenna 202 is coupled by coupling capacitor C4 and resistor R4 to an integrated

circuit 310 which amplifies the small voltage signal input into an output signal 312 which may have a voltage range between 300 and 1,000 millivolts. The output signal 312 is applied to operational amplifier 314 which produces a further output voltage gain. Signal 316 has sufficient gain to drive a voltage to constant current converting integrated circuit 318. The output signal 320 produced by the voltage to current converting integrated circuit 318 produces a constant current output which is not effected by line drop which may be resultant from the coupling of the output signal to a remote magnetron power supply 306 which contains a threshold control circuit 302. The output signal 320 is coupled to the threshold control circuit 302, which as discussed above, detects if the voltage sensed by the E field probe 102 or loop antenna 202 is above a threshold which is indicative of a signal level representing failure of the electrodeless bulb 16. Failure causes the VSWR signal, after transients have subsided as the result of the initial turning on of the magnetron 12, to reach a steady state level indicative of an unacceptably high VSWR ratio being present either within the microwave cavity/waveguide 14 or spurious microwave leakage of sufficient magnitude being within the housing 22. The threshold control circuit 302 senses if the output signal 320 is above a set threshold level, as illustrated in Fig. 8, for a time period chosen to be representative of when steady state operation occurs during normal operation of the microwave powered lamp which period may be, as illustrated in Fig. 8, a fraction of a second or longer. The threshold control circuit 302 produces an INTERLOCK CONTROL SIGNAL 304 which has one of two levels which respectively close and open a switch 307 which is indicated schematically and in practice may be any type of switching device that controls connection of the high voltage potential 309 to the

magnetron 12. The first level is indicative of the electrodeless bulb 16 representing a proper electrical load to the magnetron 12 which causes switch ~~309~~307 to be in a closed state ~~(not illustrated)~~ and the second level which causes the switch to be in an open state ~~as illustrated is~~ indicative of failure of the electrodeless bulb 16 which causes the VSWR ~~ratio~~ within the microwave cavity/waveguide 14 or housing 22 to be unacceptably high. The second level signal causes the magnetron power supply 306 to be turned off as an interlock function of the magnetron power supply.

Amendment to the Claims:

The listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) A microwave powered lamp comprising:

a light reflective cavity;

an electrodeless bulb contained in the light reflective cavity from which light is emitted when the electrodeless bulb is excited by microwaves;

a magnetron for providing the microwaves for exciting the electrodeless bulb;

a waveguide which couples the microwaves emitted by the magnetron to the light reflective cavity for exciting the electrodeless bulb;

a housing which contains the ~~lamp~~ magnetron and the waveguide;

a detector disposed within the housing or the waveguide, which detects the microwaves which are not coupled to the bulb during operation of the magnetron and outputs a signal indicative of a level of received microwaves; and

a magnetron control, coupled to the detector, which causes the magnetron to be turned off when a level of the signal indicates the level of received microwaves exceeds a threshold, indicative of the bulb not being ignited.

2. (Original) A lamp in accordance with claim 1 wherein:

the detector comprises an electrical field probe disposed in the waveguide at a location which produces a response to microwaves not coupled to the bulb sufficient to detect when the bulb is not ignited during magnetron operation and the magnetron control is a control circuit which produces a control signal for turning off the magnetron by removing electrical power from the magnetron when the threshold is exceeded.

3. (Original) A lamp in accordance with claim 2 wherein:

the electrical field probe is located at an electrical field maximum in the waveguide.

4. (Original) A lamp in accordance with claim 1 wherein:

the detector comprises an antenna located within the housing which receives spurious microwaves leaking from any of at least one of the magnetron, waveguide or light reflective cavity which produces a response to the spurious microwaves sufficient to detect when the electrodeless bulb is not ignited during magnetron operation and the magnetron control is a control circuit which produces a control signal for turning off the magnetron by removing electrical power from the magnetron when the threshold is exceeded.

5. (Currently Amended) A lamp in accordance with claim 1 wherein:

the magnetron control comprises a power supply of the magnetron and ~~the~~ electrical power from the power supply to the magnetron is reduced when the signal indicates the level of received microwaves exceeds the threshold for a set period of time.

6. (Original) A lamp in accordance with claim 2 wherein:

the magnetron control comprises a power supply of the magnetron and the electrical power from the power supply to the magnetron is reduced when the signal indicates the level of received microwaves exceeds the threshold for a set period of time.

7. (Original) A lamp in accordance with claim 3 wherein:

the magnetron control comprises a power supply of the magnetron and the electrical power from the power supply to the magnetron is reduced when the signal indicates the level of received microwaves exceeds the threshold for a set period of time.

8. (Original) A lamp in accordance with claim 4 wherein:

the magnetron control comprises a power supply of the magnetron and the electrical power from the power supply to the magnetron is reduced when the signal indicates the level of received microwaves exceeds the threshold for a set period of time.

9. (Currently Amended) A method of control of a microwave powered lam including a light reflective cavity, an electrodeless bulb contained in the light reflective cavity from which light is emitted when the electrodeless bulb is excited by microwaves, a magnetron for providing the microwaves for exciting the electrodeless bulb, a waveguide which couples microwaves emitted by the magnetron to the light reflective cavity for exciting the electrodeless bulb, a housing which contains the lamp, a detector disposed within the housing which detects microwaves which are not coupled to the bulb during operation of the magnetron and a magnetron control coupled to the detector for controlling activation of the magnetron comprising:

providing a signal from the detector indicative of a level of detected microwaves; and

the magnetron control reduces power to the magnetron when a level of the signal indicates the level of the detected microwaves exceeds a threshold indicative of the bulb not being ignited.

10. (Original) A method in accordance with claim 9 wherein:

the detector comprises an electrical field probe disposed in the waveguide at a location which produces a response to microwaves not coupled to the bulb sufficient to detect when the bulb is not ignited during magnetron operation and the magnetron control is a control circuit which produces a control signal for turning off the magnetron by removing electrical power from the magnetron when the threshold is exceeded.

11. (Original) A method in accordance with claim 10 wherein:

the electrical field probe is located at an electrical field maximum in the waveguide.

12. (Original) A method in accordance with claim 9 wherein:

the detector comprises an electrical field probe disposed in the wave guide at a location which produces a response to microwaves not coupled to the bulb sufficient to detect when the bulb is not ignited during magnetron operation and the magnetron control is a control circuit which produces a control signal for turning off the magnetron by removing electrical power from the magnetron when the threshold is exceeded.

13. (Currently Amended) A method in accordance with claim 9 wherein:

the magnetron control comprises a power supply of the magnetron and ~~the~~ electrical power from the power supply to the magnetron is reduced when the signal indicates the level of received microwaves exceeds the threshold for a set period of time.

14. (Original) A method in accordance with claim 10 wherein:

the magnetron control comprises a power supply of the magnetron and the electrical power from the power supply to the magnetron is reduced when the signal indicates the level of received microwaves exceeds the threshold for a set period of time.

15. (Original) A method in accordance with claim 11 wherein:

the magnetron control comprises a power supply of the magnetron and the electrical power from the power supply to the magnetron is reduced when the signal indicates the level of received microwaves exceeds the threshold for a set period of time.

16. (Original) A method in accordance with claim 12 wherein:

the magnetron control comprises a power supply of the magnetron and the electrical power from the power supply to the magnetron is reduced when the signal indicates the level of received microwaves exceeds the threshold for a set period of time.

17. (New) A lamp in accordance with claim 1 wherein:

the light reflective cavity is external to the housing.

18. (New) A lamp in accordance with claim 2 wherein:

the light reflective cavity is external to the housing.

19. (New) A lamp in accordance with claim 3 wherein:

the light reflective cavity is external to the housing.

20. (New) A lamp in accordance with claim 4 wherein:

the light reflective cavity is external to the housing.

21. (New) A lamp in accordance with claim 5 wherein:

the light reflective cavity is external to the housing.

22. (New) A lamp in accordance with claim 6 wherein:

the light reflective cavity is external to the housing.

23. (New) A lamp in accordance with claim 7 wherein:

the light reflective cavity is external to the housing.

24. (New) A lamp in accordance with claim 8 wherein:

the light reflective cavity is external to the housing.

25. (New) A method in accordance with claim 9 wherein:

the light reflective cavity is external to the housing.

26. (New) A method in accordance with claim 10 wherein:

the light reflective cavity is external to the housing.

27. (New) A method in accordance with claim 11 wherein:

the light reflective cavity is external to the housing.

28. (New) A method in accordance with claim 12 wherein:

the light reflective cavity is external to the housing.

29. (New) A method in accordance with claim 13 wherein:

the light reflective cavity is external to the housing.

30. (New) A method in accordance with claim 14 wherein:

the light reflective cavity is external to the housing.

31. (New) A method in accordance with claim 15 wherein:

the light reflective cavity is external to the housing.

32. (New) A method in accordance with claim 16 wherein:

the light reflective cavity is external to the housing.